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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/589,679

08/16/2006

Hiroto Horikawa

129109

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25944 7590 12/30/2008

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P.O. BOX 320850

ALEXANDRIA, VA 22320-4850

EXAMINER

ASFAW, MESFIN T

ART UNIT

PAPER NUMBER

2851

MAIL DATE

DELIVERY MODE

12/30/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/589,679	<b>Applicant(s)</b> HORIKAWA, HIROTO	
	<b>Examiner</b> Mesfin T. Asfaw	<b>Art Unit</b> 2851	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 August 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/06/2006, 09/28/2006, 08/16/2006, 12/15/2008</u> .          | 6) <input type="checkbox"/> Other: _____                          |



## DETAILED ACTION

Acknowledgement is made to the preliminary amendment filed on 08 September 2006.

### ***Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No.

11543772. Although the conflicting claims are not identical, they are not patentably distinct from each other because Claim 1 of ‘772 teach substrate table, a patterning device that impart the beam with a pattern, a measurement system, measurements take place through a liquid.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi et al. (hereinafter referred as Nishi) US 6400441 B1 (cited by the applicant) in view of Takahashi US 5610683 (cited by the applicant).

As per Claims 1, 9, Nishi teaches an exposure apparatus (See fig. 1 (10)) that exposes a substrate W, comprising:

at least two substrate stages (WS1), (WS2) each capable of holding and moving a substrate W1, W2 (Column 44 lines 18-30);

an exposure station (See fig. 2 (EPS)) that exposes through an optical system PL a substrate W2 held by one substrate stage WS2; and

a measuring station PIS that measures the other substrate stage WS1 or the substrate held by said substrate stage.

Nishi does not teach that the exposure or the measurement at the exposure or measuring station is performed in a state in which the liquid has been disposed on said substrate stage or on said substrate.

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Takahashi teaches the exposure or the measurement (for alignment or focus operation) at the exposure or measuring station is performed in a state in which the liquid 23 has been disposed on said substrate stage 12 or on said substrate 2 (Column 5 line 63 – Column 6 line 22).

Therefore, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at exposure or measurement system where the exposure or measuring activity is performed in a state in which the liquid has been disposed on said substrate stage or on said substrate in order to transfer a fine circuit pattern of a semiconductor device and for accurate focus detection.

As per Claim 2, Nishi teaches the measurement at said measuring station (WS1) is performed during the exposure at said exposure station (WS2) (Abstract).

As per Claims 3, 6, 8 and 13, Nishi teaches the substrate on the substrate stage that was measured at said measuring station WS1 is exposed at said exposure station WS2; said measuring station comprises a surface detection system (130, 132) that measures, the surface information of the substrate held by said substrate stage; and

the surface position of the substrate at said exposure station is compensated based on the results of the measurement performed at said measuring station (Column 19 line 15 – Column 20 line 13, Nishi indicated that the two surface information can be detected by using the two detecting systems 130 and 132 and that information is used during the exposure operation).

Nishi does not teach the measurement of surface detection activity conducted through the liquid.

Takahashi teaches the measurement of surface detection activity conducted through the liquid 23 (Column 5 line 63 – Column 6 line22).

Therefore, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the measurement of surface detection activity conducted through the liquid in order to get a higher resolution for best focus detection (Column 1 lines 39-55).

As per Claim 4, Nishi teaches an exposure apparatus with two stages for measuring and exposing a substrate.

Nishi does not teach a first and second liquid supply mechanism that supplies the liquid between said optical system and the substrate of the exposure and measurement stages respectively; and

the measuring station that comprises a dummy member holding a liquid contact surface substantially equivalent to the liquid contact surface of the optical system.

Takahashi teaches a liquid supply mechanism (See fig. 2, the supply pipe is connecting a circulation pump 20 to the cassette) that supplies the liquid 23 between said optical system 4 and the substrate and a dummy member (cassette 9) holding a liquid 23 contact surface substantially equivalent to the liquid contact surface of the optical system (See fig. 2, Column 6 lines 30-48).

Therefore, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at a first and second liquid supply mechanism that supplies the liquid between said optical system and the substrate of the exposure and measurement stages respectively in order to perform the measurement and exposure

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activities through the immersion liquid so that to transfer a fine circuit pattern of a semiconductor device and accurately detecting focus position.

Furthermore, Takahashi teaches the cassette 9 with an optical element 7 as displayed on figure 2.

Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the use of a dummy member to form a liquid contact surface which is substantially equivalent to the liquid contact surface of the optical system so that measurement can be conducted with the exposure operation in parallel in order to enhance throughput.

As per Claims 5 and 7, Nishi teaches an exposure apparatus with two stages for measuring and exposing a substrate.

Nishi does not teach a measuring instrument that measures the force exerted by said liquid upon said substrate or the substrate stage that holds said substrate.

Takahashi teaches a measuring instrument and a control means (a pressure gauge 27) (and pressure control means for controlling the pressure of the filling liquid, Column 3 lines 4-18) that measures the force exerted by said liquid upon said substrate or the substrate stage that holds said substrate (See fig. 2, Column 6 lines 30-48 and Column 9 lines 33-48).

Therefore, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at a measuring instrument that measures the force exerted by said liquid upon said substrate or the substrate stage that holds said



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substrate in order to enhance the function of the wafer chuck for correcting flatness of the wafer.

As per Claim 10, Nishi teaches measuring station comprises a first mark detection system that measures, an alignment mark on the substrate held by the substrate stage and also measures, a fiducial mark provided on said substrate stage (Column 45 line 44 – Column 46 line 18).

Nishi does not teach the measurement is conducted through the liquid.  
Takahashi teaches a measurement conducted through the liquid.

Therefore, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at a measurement system, where the measurement is conducted in a state in which the liquid has been disposed on said substrate stage or on said substrate in order to get a more accurate focus detection.

As per Claims 11-12, Nishi teaches an exposure apparatus with two stages for measuring and exposing a substrate.

Nishi does not teach a mark detection system that comprises an optical member with a liquid contact surface substantially equivalent to the liquid contact surface of said optical system; and

measurement is performed in a state in which the liquid is brought into contact with the liquid contact surface of said optical member.

Takahashi teaches a mark detection system that comprises an optical member (See fig. 2 (7)) with a liquid contact surface substantially equivalent to the liquid contact surface of said optical system; and

measurement is performed in a state in which the liquid is brought into contact with the liquid contact surface of said optical member (See fig. 2, Column 4 line 61 – Column 5 line 20, where optical element 7 forms the liquid contact surface of the optical system and one can use the cassette in figure 2 of Takahashi to put on stage WS1 of Nishi and conduct the measurement operation through the liquid, Nishi also indicated the measurement and exposure operations can be conducted simultaneously on Column 18 lines 20-49).

Therefore, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at a mark detection system that comprises an optical member with a liquid contact surface substantially equivalent to the liquid contact surface of said optical system to perform the measurement in order to enhance throughput.

As per Claim 20, Nishi teaches an exposure apparatus (See fig. 1 (10)) that exposes a substrate W, comprising:

- at least two substrate stages (WS1), (WS2) each capable of holding and moving a substrate W1, W2 (Column 44 lines 18-30);

- an exposure station (See fig. 2 (EPS)) that exposes through an optical system PL a substrate W2 held by one substrate stage WS2;

- a measuring station PIS that measures the other substrate stage WS1 or the substrate held by said substrate stage.

Nishi does not teach the exposure and measurement operations are conducted through the liquid. a first and second liquid supply mechanism that supplies the liquid

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between said optical system and the substrate at the exposure and measurement stages respectively;

Takahashi teaches a liquid supply mechanism (See fig. 2, the supply pipe is connecting a circulation pump 20 to the cassette) that supplies the liquid 23 between said optical system 4 and the substrate and a dummy member (cassette 9) holding a liquid 23 contact surface substantially equivalent to the liquid contact surface of the optical system (See fig. 2, Column 6 lines 30-48).

Therefore, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at a first and second liquid supplying mechanism that supplies liquid between optical system and the substrate of exposure and measurement stages of Nishi in order to perform the measurement and exposure activities through the immersion liquid so that to transfer a fine circuit pattern of a semiconductor device and for more accurate detection of focus position.

As per Claim 14, the claim is directed to a device manufactured by a method of claim 1. However, it is conceivable that the device can be made by another method other than the method of claim 1. The patentability of a device/product does not depend on its method of production. The claim is unpatentable even though the prior art product was made by a different process/method.

As per Claims 15-18, Nishi in view of Takahashi disclosed an exposure method as claimed because under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claims, then the method claimed will be considered to be anticipated by the prior art device. When the prior art

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device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. In re King, 801 F.2d 1324,231 MPEP 2112.02”

As per Claim 19, the claim is directed to a device manufactured by a method of claim 15. However, it is conceivable that the device can be made by another method other than the method of claim 15. The patentability of a device/product does not depend on its method of production. The claim is unpatentable even though the prior art product was made by a different process/method.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mesfin T. Asfaw whose telephone number is 571-270-5247. The examiner can normally be reached on Monday to Friday, 7:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on 571-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mesfin T Asfaw/  
Examiner, Art Unit 2851

12/20/08

/Hung Henry Nguyen/  
Primary Examiner of Art Unit 2851